

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) An optical transmission system comprising:
 - at least a first and a second terminal station, optically connected with each other by an optical link, said first or said second terminal station being ~~adapted-configured~~ to send on said optical link at least a first optical signal having a first direction;
 - at least a first pump source disposed along said optical link, said pump source being ~~adapted-configured~~ to send on said optical link a pump radiation in said first direction, so as to cause Raman amplification of said first optical signal; and
 - at least one device disposed along said optical link;
 - said device comprising:
 - at least a first photodetector ~~adapted-configured~~ for converting a portion of said first optical signal in an electrical signal; and
 - a first supervisory unit ~~adapted-configured~~ for amplifying said electrical signal, for extracting a first supervisory signal from said electrical signal, and for feeding said extracted amplified first supervisory signal to at least a first modulator connected to said optical link or to a driving circuit of said pump source, so as to superimpose said extracted amplified first supervisory signal on said first optical signal, wherein said first modulator is not said first pump source, and a network analyzer is coupled between said modulator and a photodiode.

2. (Previously Presented) The optical transmission system according to claim 1, wherein said first supervisory signal comprises at least an information signal on an operating state of said device.

3. (Previously Presented) The optical transmission system according to claim 1, wherein said device disposed along said optical link is a repeater and said at least first pump source is in said repeater.

4. (Previously Presented) The optical transmission system according to claim 3, wherein said first supervisory unit is associated to said first pump source.

5. (Previously Presented) The optical transmission system according to claim 1, wherein said modulator is a lithium niobate modulator.

6. (Previously Presented) The optical transmission system according to claim 1, wherein said modulator is a semiconductor modulator.

7. (Previously Presented) The optical transmission system according to claim 1, wherein said modulator is a tunable band-pass filter.

8. (Previously Presented) The optical transmission system according to claim 1, wherein said modulator is a variable optical attenuator.

9. (Previously Presented) The optical transmission system according to claim 8, wherein said variable optical attenuator is a magneto-optical variable attenuator.

10. (currently amended) The optical transmission system according to claim 1, wherein said optical link comprises at least a first optical fiber and a second optical fiber, said first optical fiber ~~being adapted~~configured to carry said first optical signal in said first direction and said second optical fiber ~~being adapted~~configured to carry a second optical signal in a second direction, opposite to said first direction.

11. (currently amended) The optical transmission system according to claim 10, wherein said device comprises at least a second pump source, said second pump source ~~being adapted~~configured to send on said second optical fiber a pump radiation in said second direction, so as to cause Raman amplification of said second optical signal.

12. (currently amended) The optical transmission system according to claim 11, wherein said device comprises at least a second photodetector, ~~adapted~~configured for converting a portion of said second optical signal in into a second electrical signal.

13. (currently amended) The optical transmission system according to claim 12, wherein said first supervisory unit is ~~adapted~~configured for amplifying said second electrical signal, for extracting a second supervisory signal from said second electrical signal, and for feeding said extracted amplified second supervisory signal to at least a second modulator connected to said second optical fiber or to a driving circuit of said second pump source, so as to superimpose said extracted amplified second supervisory signal on said second optical signal.

14. (currently amended) The optical transmission system according to claim 13, wherein said first supervisory unit is ~~adapted~~configured for generating at least a third supervisory signal, and for feeding said third supervisory signal to a driving circuit of said first or second pump source or to said first or said second modulator, so as to superimpose said third supervisory signal on said first or second optical signal.

15. (currently amended) The optical transmission system according to claim 14, wherein said first or said second terminal station comprises a second supervisory unit, ~~adapted~~configured to receive at least a portion of said first or said second optical signal from said optical link and discriminate from said first or said second optical signal said first, second or said third supervisory signal.

16. (currently amended) The optical transmission system according to claim 15, wherein said second supervisory unit is ~~adapted~~configured to generate a fourth supervisory signal to be superimposed on said first or said second optical signal.

17. (Previously Presented) The optical transmission system according to claim 16, wherein said first or said second optical signal is a WDM optical signal.

18. (currently amended) The optical transmission system according to claim 17, wherein said first or said second terminal station comprises a plurality of transmitters ~~being adapted~~configured to emit a respective plurality of optical signals having different wavelengths, and a multiplexing device ~~being adapted~~configured to multiplex said plurality of optical signals having different wavelengths in said WDM optical signal.

19. (Previously Presented) The optical transmission system according to claim 18, wherein said first or said second terminal station comprises a transmitter optical amplifier.

20. (currently amended) The optical transmission system according to claim 19, wherein said second supervisory unit is associated to said transmitter optical amplifier, so that said fourth supervisory signal is ~~adapted~~configured to modulate a gain of said transmitter optical amplifier.

21. (Previously Presented) The optical transmission system according to claim 20, wherein said transmitter optical amplifier is a co-propagating Raman amplifier.

22. (Previously Presented): The optical transmission system according to claim 16, wherein said first or said second terminal station comprises at least a third modulator, said second supervisory unit being associated to said third modulator in order to superimpose said fourth supervisory signal to said first or said second optical signal.

23. (Previously Presented) The optical transmission system according to claim 22, wherein said third modulator is a variable attenuator.

24. (Previously Presented) The optical transmission system according to claim 23, wherein said third modulator is a magneto-optical variable attenuator.

25. (Currently Amended) An optical repeater comprising:
at least a first optical fiber ~~adapted-configured~~ to carry a first optical signal in a first direction, at least a first pump source connected to said first optical fiber, said first pump source ~~being adapted-configured~~ to send on said first optical fiber a pump radiation in said first direction, so as to cause Raman amplification of said first optical signal;

at least a first photodetector ~~adapted-configured~~ for converting a portion of said first optical signal in an electrical signal; and

a first supervisory unit ~~adapted-configured~~ for amplifying said electrical signal, for extracting a first supervisory signal from said electrical signal, and for feeding said extracted amplified first supervisory signal to at least a first

modulator connected to said first optical fiber or to a driving circuit of said first pump source, so as to superimpose said extracted amplified first supervisory signal on said first optical signal.

26. (Previously Presented):) The optical repeater according to claim 25, wherein said first supervisory unit is associated to said first pump source.

27. (Previously Presented) The optical repeater according to claim 25, wherein said modulator is a lithium niobate modulator.

28. (Previously Presented) The optical repeater according to claim 25, wherein said modulator is a semiconductor modulator.

29. (Previously Presented): The optical repeater according to claim 25, wherein said modulator is a tunable band-pass filter.

30. (Previously Presented): The optical repeater according to claim 25, wherein said modulator is a variable optical attenuator.

31. (Previously Presented) An The optical repeater according to claim 30, wherein said variable optical attenuator is a magneto-optical variable attenuator.

32. (currently amended) The optical repeater according to claim 25, further comprising at least a second pump source connected to a second optical fiber ~~adapted-configured~~ to carry a second optical signal in a second direction, opposite to said first direction, said second pump source ~~being adapted-configured~~ to send on said second optical fiber a pump radiation in said second direction, so as to cause Raman amplification of said second optical signal.

33. (Previously Presented) The optical repeater according to claim 32, further comprising, at least a second photodetector for converting a portion of said second optical signal in into a second electrical signal.

34. (currently amended) The optical repeater according to claim 33, wherein said first supervisory unit is ~~adapted-configured~~ for amplifying said second electrical signal, for extracting a second supervisory signal from said second electrical signal, and for feeding said extracted amplified second supervisory signal to at least a second modulator connected to said second optical fiber or to a driving circuit of said second pump source, so as to superimpose said extracted amplified second supervisory signal on said second optical signal.

35. (currently amended) An The optical repeater according to claim 34, wherein said first supervisory unit is ~~adapted-configured~~ for generating at least a third supervisory signal, and for feeding said third supervisory signal to a driving circuit of said first or second pump source

or to said first or said second modulator, so as to superimpose said third supervisory signal on said first or second optical signal.

36. (Previously Presented) A method for supervising an optical transmission system comprising an optical link between at least a first and a second terminal station, said method comprising:

transmitting a first optical signal on said optical link in a first direction;

sending on said optical link a pump radiation in said first direction, so as to cause Raman amplification of said first optical signal;

converting, in a point along said optical link, a portion of said first optical signal into an electrical signal

amplifying said electrical signal;

extracting a supervisory signal from said electrical signal; and

superimposing said extracted amplified supervisory signal on said first optical signal.